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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BHARADWAJ, KALPANA

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/811,900	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> KALPANA BHARADWAJ	<b>Art Unit</b> 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/30/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Status of Claims*

1. Claims 1-23 are pending.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 8-14 and 19-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Flaxer (USPN 2004/0162741, referred to as **Flaxer**).

### **Claim 1, 12:**

Flaxer teaches a method for automatic service composition, searching services from registered service specifications to find a single service or compose a service flow according to a service request, the method comprising:

a service request receiving step, for receiving a problem file established according to the service request (**Flaxer**, ¶ 0027: service requesters);

a service specification receiving step (**Flaxer**, ¶ 0028: specifications for service composition), for receiving a domain file established according to at least one service specification (**Flaxer**, ¶ 0042: hierarchy of functional domain), the at least one service specification being used for executing an action which defines an action name (**Flaxer**, ¶ 0085: operation name), zero or at least one input parameter (**Flaxer**, ¶ 0085: input ... data type), and zero or at least one output parameter (**Flaxer**, ¶ 0085: output data type), wherein any two different service specifications (**Flaxer**, ¶ 0085: define primitive services) can use an object with the same data type as the input parameter or the output parameter (**Flaxer**, ¶ 0085: input and output data type);

a new object predicting step (**Flaxer**, ¶ 0012: dynamically predict and modify), for predicting a new object by extracting data types needed by the declared objects of the problem file or the domain file (**Flaxer**, ¶ 0084: context variable ... data type) to select at least one service specification related to the data type and storing the selected service specifications in a chosen service set (**Flaxer**, ¶ 0088: service repository);

a new object declaring step (**Flaxer**, ¶ 0153: adds new tasks), for declaring the new object by counting a frequency N for each data type used (**Flaxer**, ¶ 0268: Frequency Table) as the input parameter and a frequency M for each data type used as the output parameter in the chosen service set; if  $M > 0$ , the data type is also used as the output parameter, and  $C \cdot \text{times} \cdot (N + M)$  new objects are declared in the domain file for the data type, wherein C is an integer (**Flaxer**, ¶ 0267-0268: For each d .epsilon the algorithm searches its data source); and

a service composition generating step, for generating a service flow (**Flaxer**, ¶ 0017: generation of new or revised decision flows) by generating a series of action execution sequences of the single service or composite service (**Flaxer**, ¶ 0013: execution of decision flow), from service specifications stored in the service repository (**Flaxer**, ¶ 0088: service repository) according to the problem file and the domain file, for being executed to accomplish the service request (**Flaxer**, ¶ 0143: accomplished by business rule inferencing).

As for the additional limitations of Claim 12, Flaxer teaches a translation layer for translating the service specification to a domain file (**Flaxer**, ¶ 0343: service ontology ... inside a domain) and also for translating a composite service to a service flow (**Flaxer**, ¶ 0082: model business processes (i.e. composite services); **EN**: to 'model' is to translate).

**Claim 2, 22:**

Flaxer teaches the method claimed in claim 1 further comprising: a correlation establishing step, for establishing at least one level of data-type-service graph between all service specifications and data types (**Flaxer**, ¶ 0085: service classes; data type; **EN**: The 'service class' definition correlates specifications with data types), wherein the new object predicting step follows the interactive usage correlation structure to select at least one service specification related to the data type (**Flaxer**, ¶ 0037: selects service providers).

**Claim 3, 23:**

Flaxer teaches the method claimed in claim 1, wherein the service request defines an initial state and a goal state and uses the series of action execution sequences to transform from the initial state to the goal state to accomplish the service request (**Flaxer**, ¶ 0046: state machine for a service composition; **EN**: a 'state machine' inherently does transformations from the initial to the goal state).

**Claim 8, 14, 19:**

Flaxer teaches the method claimed in claim 1, wherein the service specifications are defined by at least one service provider and are published in a service repository of a service registry (**Flaxer**, ¶ 0331: PLM Repository).

**Claim 9:**

Flaxer teaches the method claimed in claim 8, wherein a UDDI (universal description discovery and integration) registration protocol is used to publish the service specifications to the service registry (**Flaxer**, ¶ 0331: UDDI directory feature).

**Claim 10, 20:**

Flaxer teaches the method claimed in claim 1, wherein the service specification defines zero or at least one precondition (**Flaxer**, ¶ 0250: required precondition) and zero or at least one effect (**Flaxer**, ¶ 0290: process to effect).

**Claim 11, 21:**

Flaxer teaches the method claimed in claim 10, further comprising, after the new object declaring step, a modifying step, for adding a precondition (**Flaxer**, ¶ 0250: required precondition) and an effect to each output parameter of each service specification in the chosen service set (**Flaxer**, ¶ 0156: Event-Condition-Action) .

**Claim 13:**

Flaxer teaches the system claimed in claim 12, wherein the composition engine (**Flaxer**, ¶ 0082: service composition schemas) is stored with one service registry (**Flaxer**, ¶ 0310: service provider onboarding and registration).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-7 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flaxer as applied to claim 1 above, and further in view of Koehler (USPN 2003/0085079, referred to as **Koehler**).

**Claim 4, 15:**

Flaxer teaches the method claimed in claim 1, wherein the service request is a file with an XML (extensible markup language) format (**Flaxer**, ¶ 0155: XML document)

Flaxer does not teach translation into a problem file with a PDDL (planning domain definition language) format via a translation process.

However, Koehler teaches translation into a problem file with a PDDL (planning domain definition language) format via a translation process (**Koehler**, ¶ 0074: expressed in the plan representational language PDDL). Flaxer and Koehler are from the same field of endeavor, request processing. It would have been obvious to one of ordinary skill in the art to have modified Flaxer's request processing system with PDDL, for the benefit of increased expressive power of PDDL (**Koehler**, ¶ 0074).

**Claim 5, 16:**

Flaxer teaches the method claimed in claim 1, wherein the service specifications are files with an XML format (**Flaxer**, ¶ 0155: XML document).

Flaxer does not teach translation into a domain file with a PDDL format via a translation process.

However, Koehler teaches translation into a domain file with a PDDL format via a translation process (**Koehler**, ¶ 0074: expressed in the plan representational language PDDL). ). Flaxer and Koehler are from the same field of endeavor, request processing. It would have been obvious to one of ordinary skill in the art to have modified Flaxer's

request processing system with PDDL, for the benefit of increased expressive power of PDDL (**Koehler**, ¶ 0074).

**Claim 6, 17:**

Flaxer modified by Koehler teaches the method claimed in claim 5, wherein a DMAL-S standard is used to define the service specifications as a file based on a RDF (resource description framework) format (**Flaxer**, ¶ 0330: XML elements; **EN**: RDF and DMAL are inherent with the use of XML).

**Claim 7, 18:**

Flaxer modified by Koehler teaches the method claimed in claim 5, wherein a WSDL (web services description language) standard is used to define the service specifications as a file with an XML format (**Flaxer**, ¶ 0331: defined using WSDL; ¶ 0330: XML elements).

**Examinations Considerations**

6. Examiner's Notes (**EN**) are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior

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art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

7. Examiner has cited particular columns and line numbers (or paragraphs) in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. The entire reference is considered to provide disclosure relating to the claimed invention.

### ***Conclusion***

8. Claims 1-23 are rejected.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Boughannam, USPN 2004/176988, cited for web service composition.

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALPANA BHARADWAJ whose telephone number is (571)270-1641. The examiner can normally be reached on Monday-Friday 7:30am 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on (571) 272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bharadwaj Kalpana/  
Examiner, Art Unit 2129

/David R Vincent/  
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